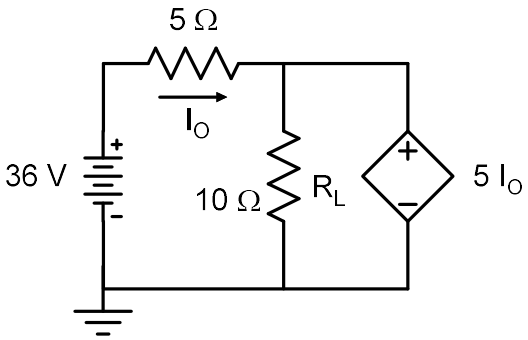
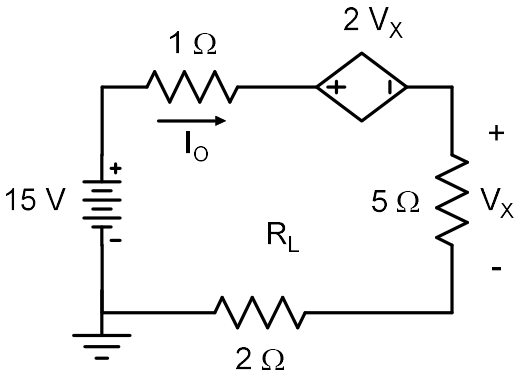
ESC201T: Introduction to Electronics

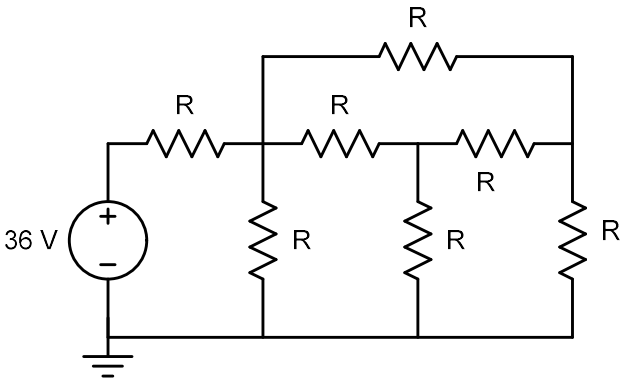
HW -2 **Date: 4.9.2020**

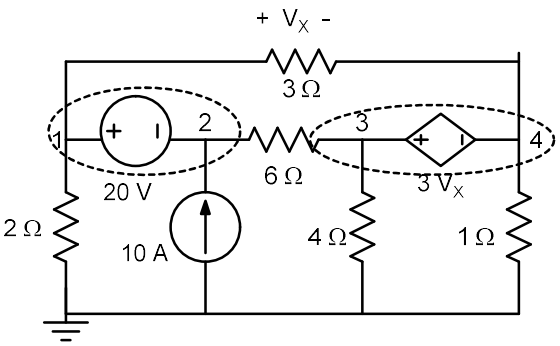
Q.1 Determine the unknown current I_O in the circuits shown below:





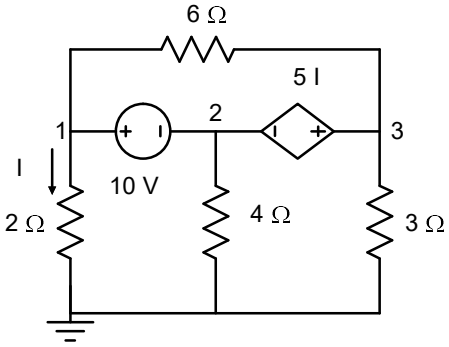
Q.2 Apply the method of nodal analysis to the circuit shown below on the left and write down the set of equations in terms of unknown node voltages.



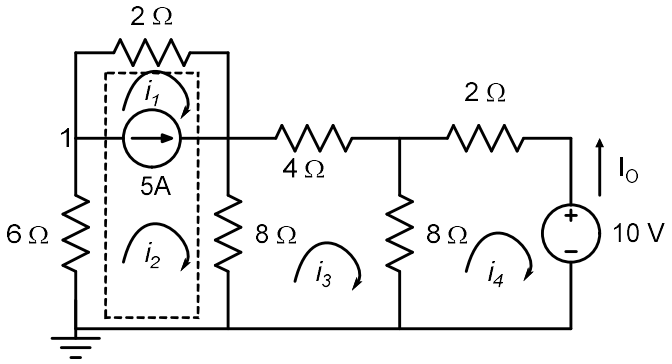


Q.3 Apply the method of nodal analysis to the circuit shown above on the right through use of the concept of super-node (meaning the dotted surface is taken as a node).

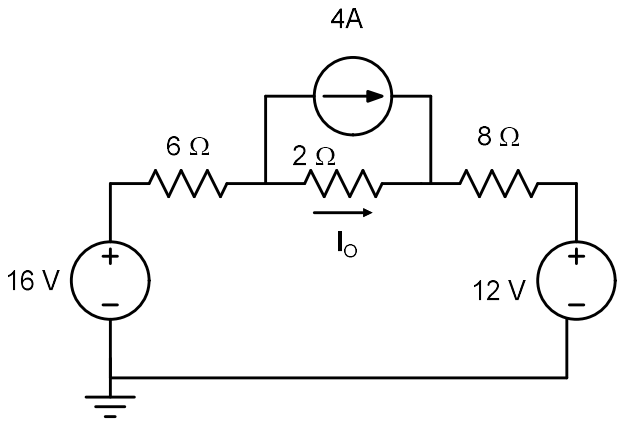
Q.4 Apply mesh analysis to the circuit shown below.



Q.5 Use the concept of supermesh to analyze the circuit shown below and determine current I_O .



Q.6 Determine current in 2Ω resistor by building Thevenin's equivalent for the rest of the circuit



Q.7 Determine Norton's equivalent for the circuit shown below between terminals a and b

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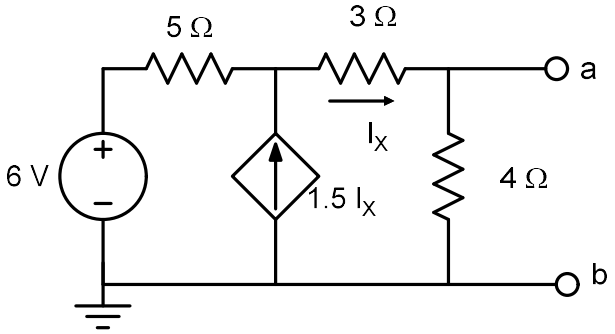
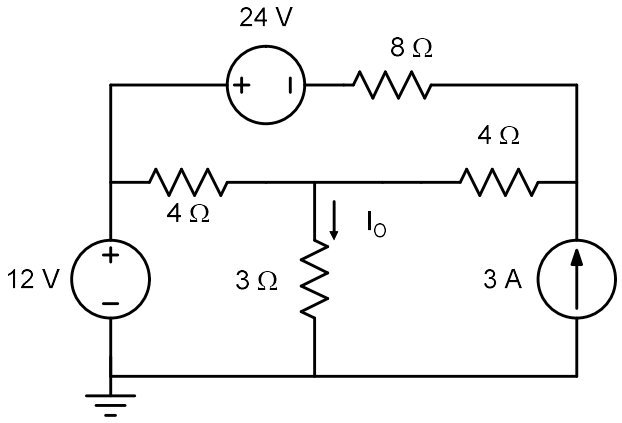


Q.8 Use superposition theorem to solve for current I_O in the circuit shown below



Q.9 Use superposition theorem to solve the circuit of Q.5

Q.10 Apply source transformation repeatedly to transform the circuit shown below on the left into the simplified circuit shown on the right. Determine the value of current I_x and resistance R_x and use it to determine to obtain the voltage v_o .